

Part 1

Toothpaste, Teeth and Toxins

Introduction

We all know that our health matters, and as the pioneering and innovative dentist, Melvin E Page (1894-1983), succinctly pointed out,

“when our bodies function properly we have excellent health and they are wonderful places in which to live, but when their functions are impaired and they become unhealthy they can be like burdens and prisons and cause a great deal of suffering”. (1)

Melvin Page came to the conclusion, that dentistry was a key to good health. Other researchers have since confirmed his understanding and discovered that, healthy gums and teeth can determine our degree of disability in older age and even how long we are likely to live, while tooth loss is “independently associated” with disability and mortality. (2)

However, to keep healthy and to keep enjoying life we need to be informed so that we are able to make good healthy choices. This can be a challenge when there is a lack of transparency and when information can be suppressed, buried or falsified by industry and commerce for financial gain. For better information it is not always the expert who knows a lot about a little but misses the bigger picture entirely. And even the science is continually being updated. Prof Julius Axelrod, the Nobel Laureate who died, aged 92, in 2004, said:

“In science the accepted interpretations are usually wrong. Find and fill an important gap and you may change the whole picture.”

But this is not always easy, as many scientists have discovered, particularly when new discoveries and information clash with existing established norms.

This book highlights the work of eminent scientists, doctors, researchers, who have often clashed with main stream thinking, and it also highlights the ‘jewels of wisdom’ gained from personal experience.

Chapter 1

The toothpaste question

Toothpaste is used exclusively for cleaning teeth and gums and on most days it is swilled around our mouths twice or thrice a day. Our teeth, like the rest of the body, consist of cells, living tissue and bone, the same blood goes to them that goes to all the other body parts.

Our mouths are very sensitive; anything placed into the mouth, whether it is food, drink or toothpaste, starts to be digested and absorbed through the gums, from the skin of the tongue, under the tongue, and through the cheeks, sometimes within seconds. (3)

It may come as a surprise, or even a shock, to many people, that toothpaste has had some adverse publicity over the years, see below, and may not be as healthy as they had expected.

- In 1962, two leading British researchers, G. I. Slack and W. J. Martin, put the claimed ‘miracle’ ingredient in Crest toothpaste, stannous fluoride, to the test. Two years later they terminated the experiment because evaluation over that time had failed to show ANY effect of the dentifrice/toothpaste under test. (4)

In 1964, on November 8th, a report from the ‘British Dental Journal’ carried in the Philadelphia Bulletin, stated that, a four-year experiment involving 1,000 English children had been abandoned because no significant differences were found between fluoridated dentifrices/toothpastes and non-fluoridated ones. According to the newspaper report, Dr Malcolm Naylor, Senior Lecturer in preventative Dentistry at Guys hospital, London, commented that the British test was;

“An independent trial by university professors, and all statistics were treated by independent statisticians. In some of the US experiments, the statistical work was done by the toothpaste manufacturers or by firms which were paid by manufacturers”.

- In 1996, manufacturers Colgate-Palmolive paid out £1,000 to a child whose teeth appeared to have been damaged by the fluoride in toothpaste. The manufacturers said that it was a ‘goodwill’ payment. Sharon and Trevor Isaac’s 10-year-old son, Kevin, was diagnosed as suffering from dental fluorosis, where the tooth’s enamel is mottled by fluoride. Mrs Isaac's said her family did not have fluoridated water and had never used fluoride tablets.

“I always used Colgate’s Minty Gel and the pea-sized amount as recommended. Kevin didn’t eat sweets and I used to make sure he brushed his teeth twice a day. He did used to swallow the toothpaste. I rang Colgate, but they said he would be all right. Kevin was teased at school over his two rotten teeth.” (5)

At the time, Nottingham-based solicitor Julian Middleton had a list of more than 200 children with such a condition waiting for compensation.

- In 2009, George Pinnell complained to the Advertising Standards Authority (ASA) about an advert in ‘The Vegetarian’ magazine. The manufacturer, Multibrands International Ltd, had an advert in this magazine claiming that their toothpaste;

“Fluoridine Fresh Active with enriched fluoride strengthens enamel and helps prevent cavities and decay.”

This was deemed a medical claim which, as it did not have the authorisation of the Medicines and Healthcare Regulatory Agency (MHRA), was without a licence. Multibrands, therefore, had to withdraw their advert. (6)

- In 2017, a toothpaste study with lead researcher Ms Joao-Souza et al, experts from the universities of Bern in Switzerland and Sao Paula in Brazil, showed that toothpaste brands like Colgate and Sensodyne fail to stop enamel loss. All toothpastes tested contained fluoride concentration varying from 1,040 - 1,450 ppm. The study revealed that the toothpastes tested were not able to prevent, repair or reduce enamel surface loss (as many of them claimed) which was a key factor in the hypersensitivity of teeth. The researchers said that fluoridated toothpastes do not work.
- In 2018, Procter and Gamble Ltd had to withdraw a TV advert for their ‘Oral Gum and Enamel Repair’ toothpaste, because the advert made a medicinal claim that:

“Stannous fluoride along with calcium and phosphate helped to repair enamel in two weeks.”

The toothpaste was neither a licensed medicine nor a registered medical device, so the ASA concluded that the advert breached the BCAP Code rules 11.4 and 11.19 (Medicines, medical devices, treatments and health). (7)

- In 2019, a court case ruled that toothpaste does not do what it often claims, i.e. ‘whitening teeth’. (8)

Colgate's own marketing data for MHRA authorisation PL 000490053 states;

“After oral administration, fluoride absorption is rapid and extensive with (90-100%) peak fluoride plasma levels reaches within 30 to 60 minutes after ingestion. Fluoride is widely distributed through the body and concentrates in the bones and teeth. About 50% of fluoride absorbed is stored. Excretion is primarily through the kidneys with less than 10% being excreted in the faeces and less than 1% in sweat and saliva.”

Present-day toothpastes and their contents

It may disturb many people to discover that toothpaste contains substances that are harmful to the body.

Triclosan

This has been linked to allergies, endocrine disruption, thyroid dysfunction and antibiotic resistance. (9)

Sodium Lauryl Sulphates (SLS)

These are responsible for the foaming action and are linked to skin irritation and painful canker sores. Pharmaceutical manufacturers use SLS to increase the absorption of medication used on the skin. SLS is registered as a pesticide and has a close cousin called Sodium Laureth Ether Sulphate (SLES) that should also be avoided. Both SLS and SLES are banned by the European Union, but not by the USA. (12 Aug 2010). (10)

Propylene Glycol

This is also used as a surfactant and linked to skin, eye and lung irritation as well as organ system toxicity. (11)

Diethanolamine (DEA)

Another foaming agent and a known hormone disrupter, this is linked to cancers of the stomach, oesophagus, liver and bladder. (12)

Artificial food colours

These have been linked to hyperactivity, while some pose a risk of cancer and allergic reactions. (13)

Preservatives

Sodium benzoate, methyl paraben and ethyl paraben are the three most common preservative ingredients used to keep toothpaste from becoming home to all sorts of nasty bacteria. Parabens have come under intense scrutiny – particularly because they mimic oestrogen in the body, according to the Breast Cancer Fund. Exposure has been linked to cancer and developmental and reproductive toxicity. (14)

Sweeteners

Aspartame and other artificial sweeteners can be added. Aspartame has been linked to birth defects, cancer, brain tumours and weight gain. (15)

Carrageenan

This is a thickening agent linked to intestinal inflammation, insulin resistance and glucose intolerance. (16)

Microbeads

In toothpaste, these can get trapped between teeth and under gums, keeping bacteria from being washed away and contributing to gum disease. In the UK, microbeads were banned from toothpaste in June 2018. (17)

Glycerine

This is added to give toothpaste a 'pasty' consistency and helps prevent it from drying out. It leaves a sticky film around teeth, needing 27 rinses to wash away, says Dr G. E. Judd and H. Eggers Lura, dental researchers. The sticky film hinders remineralisation and traps sugar to its surface. (18)

Fluoride

It is claimed that fluoride helps prevent dental decay but it is a poison. The fluoride in toothpaste is either sodium fluoride, stannous fluoride, or monofluorophosphate. Most toothpaste contains between 1,000 and 1,500 part per million fluoride (ppm) (source: Wagner). A standard 4.5-ounce tube of Colgate for Kids, at 1.100ppm contains 143 milligrams of fluoride (source: Fluoride Action network). More information on fluoride's toxicity in Part 2. (19)

The history of toothpaste

The use of toothpaste goes back a long way. The Egyptians (3000 to 5000 BC) made a tooth powder from powdered ox hooves, myrrh, powdered burnt eggshells and pumice.

Persians (1000 BC) added abrasives such as crushed bones and burnt shells of snails and oysters, along with gypsum.

Ancient Greeks and Romans (AD 1) used powdered mouse brains as toothpaste. It has recently been discovered from archaeological digs that the ancient Romans had excellent teeth.

Eighteenth century American and British toothpaste used burnt bread.

In 1824, a dentist named Peabody added soap to toothpaste.

In the 1880s, a collapsible tube made of lead was invented by Dr Washington Sheffield to contain the paste used for cleaning teeth.

In 1908, a toothpaste called 'Kolynos' containing disinfectant was being produced. Henry Ward-Foot, a Professor of Chemistry, had spent 17 years on its development.

In the 1950s, fluoride in toothpaste received the American Dental Association's (ADA) approval and, by 1955, Procter and Gamble's 'Crest' was launched, soon to be followed by other fluoridated toothpastes heralded, 'to combat tooth decay and to remineralise teeth'.

Other toothpastes, however, have been launched without fluoride. In Japan in the 1980s, the company Sangilo Ltd launched 'Apadent' toothpaste, said to be the first remineralising toothpaste. This was a nanoform of hydroxyapatite, the main component of tooth enamel.

On June 24th 2003, 'Cavistat Paste' was presented in Sweden, claiming that if you brushed with this paste you would have 96 fewer cavities. (20)

In 2006 in Europe, 'BioRepair' appeared containing synthetic hydroxyapatite. The 'biometric hydroxyapatite' claimed to protect teeth by forming a layer around them.

In 2013, 'Mini Marbles that can repair teeth' was heralded. Scientists from Queen Mary University of London reported that they had made a tiny biodegradable glass ball – 'bioglass', composed of calcium and phosphate components – for use in toothpaste, claiming that it could halt decay and help sensitive teeth. (21)

Introduction of Biocompatible hydroxyapatite as a – toothpaste effective against decay – study 2021.

An analysis of clinical trials on the use of toothpastes containing hydroxyapatite (HAP) has led researchers from the University of Toronto and the Dr Kurt Wolff Company of Germany to conclude that these safe, fluoride-free toothpastes are effective in reducing tooth decay. (22)

Organic options are now available such as:

- Dr Bronner's All-One Toothpaste;
- Green People Toothpaste;
- Happy Teeth Organic Toothpaste;
- Miessence Toothpaste;
- Dr Curatola's Revitin Toothpaste.
- Chew sticks or miswak. Miswak is most generally associated with the *Salvadora persica* tree, commonly known as 'arak' in Arabic. Miswak has been known to increase the formation of saliva in the mouth and has antibacterial properties which helps prevent bacteria from accumulating on the teeth and gums (studies conducted by WHO). It also has a refreshing aftertaste and fragrance.

In recent times, David Kennedy DDS reports that it is possible to make your own toothpaste by just using baking soda and mixing this with coconut oil, peppermint essential oil or other flavours to make it more pleasant and palatable.

While Dr Elma Jung suggests 'blotting' or 'the blotting technique' which only requires a soft toothbrush. The gentle, careful brushing with an 'up and down' movement is claimed to encourage saliva which does the clearing, cleaning and remineralisation.

Dentists often advise 'flossing' to clear any food particles from between teeth, and/or 'oil pulling' to pull out toxins from within the mouth and gums. Oil pulling uses an organic oil such as coconut oil alone or with added ingredients such as neem powder and/or bicarbonate of soda. A teaspoon of this oil mixture is swished around the mouth for about 20 mins and then spat out.

To end this section it is interesting to note the observations of Melvin Page, D.D.S.

"Neither the Maya nor the Eskimo ever brush their teeth, although the Maya do rinse out the mouth with water after eating. They are around 90 per cent or more completely free from tooth decay. Clearly the answer to preventing tooth decay is not found in toothpaste or tooth brushes.....Toothpaste may make the mouth feel good and help with halitosis but its effect in preventing dental decay is very little and a hard brush constantly run over the enamel can actually be harmful....The answer to the cause and prevention of dental decay is to be found in nutrition and endocrinology". (23)

Toothpaste regulations in the UK

Dr Mercola wrote in his newsletter of August 31st 2016, the following;

"Over the course of a lifetime, the average person uses about 20 gallons of toothpaste, and even though you don't swallow it, chemicals in the toothpaste can make their way into your blood stream, courtesy of the fact that your mouth has an absorption efficiency rate of more than 90 percent."

Toothpaste regulations are confusing to say the least, as no organisation seems to want the final responsibility, particularly regarding the fluoride question. Over the years, Doug Cross, Fellow of the Royal Society of Biology, Chartered Biologist, and Honorary Member of the Collegium Basilea Institute of Advanced Study in Basel, Switzerland, has done a lot to create an awareness about sloppy regulation in both medical and cosmetic law regarding fluoride. In part, he has been successful for some changes that have occurred.

For new guidelines on toothpaste, as of April 2020, the Medical Healthcare and Research Agency (MHRA) directs inquiries to the 'CTPA Guide of Classification of Toothpaste Claims', where, of December 2018, it is stated in the introduction:

"A toothpaste can potentially be classified as a cosmetic, a medicinal product or medical device, depending on its composition, mode of action, and how the product is presented."

The MHRA reaches a determination on whether a product is a medicinal product or a medicinal device on a case-by-case basis, and in the light of:

- the definition of a medicinal product
- the definition of a medical device
- an assessment of all the available evidence
- relevant ECJ and domestic Court precedents.

The Cosmetic Regulation (EC) N*1223/2009 allows the use of fluoride compounds in oral care products with a maximum concentration of 0.15% calculated as fluoride. This means that the determination of how a fluoride toothpaste within this limit will be regulated will be assessed principally on the overall product presentation.

Daily use products, such as toothpaste, are part of everyone's normal grooming routine and the MHRA recognises that they are not, intuitively, regarded as medicines by the consumer.

Cosmetic definition

Article 2(1)(a) of the Cosmetic Regulation (9EC) 1223/2009 as amended, defines a 'Cosmetic Product' as:

"Any substance or mixture intended to be placed in contact with the external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in a good condition or correcting body odours..."

A toothpaste that is marketed with the purpose of cleaning (e.g. helping remove and prevent plaque), perfuming (e.g. aiding fresh breath), protecting (e.g. helping protect against tooth decay) and keeping teeth and the oral cavity in good condition (e.g. maintaining healthy teeth and gums) fulfils the cosmetic definition.

Medical claims

Article 1 of Directive 2001/83/EC as amended defines a 'medical product' as:

“Any substance or combination of substances presented as having properties for treating or preventing disease in human beings; [the first/presentation]. Any substance or combination of substances which may be used in, or administered to, human beings, either with a view to restoring, correcting or modifying physiological function by exerting a pharmacological, immunological or metabolic action, or making a medical diagnosis [the second/functional limb].

“Medicinal products may well fall under both limbs of the definition, but the European Court of Justice (ECJ) has confirmed that falling under either limb is sufficient to classify a product as a medicinal product.”

This may all sound confusing, but the next part of this CTPA statement goes on to obscure even more, particularly as to whether fluoride use in toothpaste is cosmetic or medicinal.

Doug Cross, however, simplifies all this by stating:

“The EU/UK medicinal product law relating to toothpastes specifically requires any toothpaste with more than 1,400 ppm of fluoride to hold a Medicinal Product Marketing Authorization – a licence – and to be a prescription - only product. Any other toothpaste containing a lower amount of fluoride comes under cosmetic regulations and can be sold without a licence as long as no medicinal claims are made for the product. These may not be ‘ingested’, however, so any dentist giving advice to children saying: “Spit, but don’t rinse,” is in breach of criminal law.” (24)

In a letter to the UK's Department of Health in 2007, Doug Cross states:

“The fact that fluorosilicic acid may conform in its manufacture with a British Standard does NOT constitute its authorisation for use as a pharmaceutical product. The DoH is fully aware that ALL medicinal products must be produced under pharmaceutical manufacturing conditions (this is not the same as those required for industrial chemicals) and under the supervision of ‘qualified persons’ within the pharmaceutical industry. It is also fully aware that all such products may only be used when they have the relevant marketing authorisation. Since no authorisation exists for either fluorosilicic acid or any diluted solution of it, then its use as a pharmaceutical product is illegal, and even its promotion and advertising is a criminal offence under the provisions of the Medicines Act.”

(Confirmed in UK Regulation 1631/2007, the only compounds of fluoride permitted in food (and water is food) are sodium fluoride (milk fluoridation) and potassium fluoride (salt fluoridation). Hydrofluorosilicic acid (H₂SiF₆ and Na₂SiF₆) or Hydrofluoric acid (HF) is not permitted.)

Sodium fluoride (NaF) is readily dissolved in water (H₂O) and the fluorine ion is released from the sodium. The fluorine ion vigorously reacts with the water and combines with the hydrogen to form hydrogen fluoride (HF) and oxygen. Hydrofluoric acid is then formed when in contact with more water. Both HF and hydrofluoric acid are extremely active and dangerous poisons. The chemical formula is NaF + H₂O = Na⁺aq + F⁻aq

Unfortunately, companies are not obliged to state exactly what ingredients are used in their products.

Toothpaste regulation in the USA

In the USA the regulation for fluoridated toothpaste regulation is also most complicated and confusing. The Food and Drug Administration (FDA) also considers fluoridated toothpaste to be cosmetic but says on its website, 21st Dec 2000, that fluoride is a drug stating;

“Fluoride, when used in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or animal, is a drug which is subject to Food and Drug Administration regulations”.

Yet the FDA has failed to prove that fluoride is either safe or effective. To follow more on this story visit the Fluoride Action Network (FAN).

Chapter 1 - references

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